

**Closure Cost Estimate
Clean Harbors Aragonite
Incineration Facility
Aragonite, Utah**

Prepared By:

**American, Inc.
Salt Lake City, UT Boulder, CO**

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SECTION I

EXECUTIVE SUMMARY

I. Executive Summary

At the request of Safety-Kleen, Inc, now Clean Harbors Aragonite, LLC, Americon, Inc. has prepared the following closure cost estimate for the Aragonite incineration facility. This estimate is based on the eventual closure of the entire facility by a third party.

This revised closure cost estimate totals \$~~12,969,024~~13,692,607. In Section II of this document, tables are provided which summarize the total closure cost estimates broken out by closure activity and area. In Section III, detailed closure cost estimates are provided for each major process area. These estimates indicate costs by area closure activity. Additionally, a table is provided for each of these major process areas, which tabulates the closure activity total for that process area.

Costs associated with the removal and disposal of waste in storage were calculated by using 2001 gate rates for waste disposal at the Clean Harbors Deer Park, TX facility. Costs for removal and disposal of 1.3G explosive wastes were based on 2021 rates at the Clean Harbors Colfax, LA facility adjusted for inflation back to the 2012 baseline. Costs associated with sampling and analyses were calculated by utilizing the sampling and analytical methods for decontamination verification approximating the methodology used in the Northeast Casualty Real Property Clive facility closure efforts. All costs have been adjusted for inflation to make current as of 2012.

This closure cost estimate is based upon the assumption that all areas are full to their permitted capacities, off-site transportation and disposal costs are calculated using commercially available rates, independent third-party closure, analytical costs are quoted by Utah certified commercial laboratories, and closure certification is made by a Utah registered Professional Engineer. All cost estimates, except removal and disposal of explosive wastes, use available 2001 pricing adjusted for inflation using the U.S. Department of Commerce Implicit Price Deflators for the Gross Domestic Product to make the prices current as of 2012. The adjustment to 2012 prices was calculated by multiplying the 2001 cost estimates by the 2011 Implicit Price Deflator for the Gross Domestic Product divided by the 2001 Implicit Price Deflator for the Gross Domestic Product as released by the U.S. Department of Commerce, January 27, 2012, i.e., 113.327/90.727. Adjustments to the removal and disposal costs for the explosive wastes were made by multiplying the 2021 cost estimate by the 2012 Implicit Price Deflator for the Gross Domestic Product divided by the Gross Domestic Product Implicit Price Deflator for 2020, i.e., 100/113.625. Sampling and closure standards for verification of decontamination are assumed to be consistent with those applicable to the Northeast Casualty Real Property Clive incineration facility closure.

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SECTION II
CLOSURE COST SUMMARIES

AREA SUMMARY TABLE (includes costs from all areas)	
Activity	Cost
Removal of Waste	\$1,009,617
Decontamination	\$1,054,080 <u>1,056,553</u>
Sampling and Analysis	\$244,402 <u>245,806</u>
Transportation	\$1,579,433 <u>1,605,767</u>
Treatment and Disposal	\$7,274,825 <u>7,871,092</u>
Subtotal of Closure Costs	\$11,162,357<u>11,788,835</u>
Engineering Expenses	\$558,118 <u>589,442</u>
Certification of Closure	\$69,547
Subtotal of Closure Costs	\$11,790,022<u>12,447,824</u>
Contingency Allowance	\$1,179,002 <u>1,244,783</u>
TOTALS	\$12,969,024<u>13,692,607</u>

**Clean Harbors Aragonite Incineration Facility
Closure Cost Estimate by Area**

Area	Activity	Cost	Area Subtotal
Container Storage	Decontamination	<u>\$214,313,216.786</u>	
	Sampling and Analysis	<u>\$59,816,611.220</u>	
	Transportation	<u>\$1,181,250,120.7584</u>	
	Treatment and Disposal	<u>\$4,570,250,166.517</u>	
	Subtotal	<u>\$6,025,629,652.107</u>	
	Engineering	<u>\$301,281,332.605</u>	
	Certification	\$18,173	
	Subtotal	<u>\$6,345,087,002.885</u>	
	Contingency	<u>\$634,508,700.289</u>	
	Area Total	<u>\$6,979,591,703.174</u>	<u>\$6,979,591,703.174</u>
Tank Farm	Waste Removal	\$13,097	
	Decon (including flush, purge)	\$273,444	
	Sampling and Analysis	\$27,110	
	Transportation	\$244,185	
	Treatment and Disposal	\$904,497	
	Subtotal	\$1,462,333	
	Engineering	\$73,117	
	Certification	\$18,173	
	Subtotal	\$1,553,623	
	Contingency	\$155,362	
	Area Total	\$1,708,985	\$1,708,985
Bulk Solids	Waste Removal	\$6,498	
	Decontamination	\$118,121	
	Sampling and Analysis	\$22,026	
	Transportation	\$107,415	

Area	Activity	Cost	Area Subtotal
	Treatment and Disposal	\$1,406,724	
	Subtotal	\$1,660,784	
	Engineering	\$83,039	
	Certification	\$10,484	
	Subtotal	\$1,754,307	
	Contingency	\$175,431	
	Area Total	\$1,929,738	\$1,929,738
Sludge Tanks	Waste Removal	\$9,326	
	Decon (including flush)	\$60,455	
	Sampling and Analysis	\$5,622	
	Transportation	\$14,606	
	Treatment and Disposal	\$220,405	
	Subtotal	\$310,414	
	Engineering	\$15,521	
	Certification	\$4,543	
	Subtotal	\$330,478	
	Contingency	\$33,048	
	Area total	\$363,526	\$363,526
Kiln	Removal of Waste Residue	\$980,696	
	Decon (including disassembly)	\$387,747	
	Sampling and Analysis	\$129,828	
	Transportation	\$31,977	
	Treatment and Disposal	\$172,949	
	Subtotal	\$1,703,197	
	Engineering	\$85,160	
	Certification	\$18,174	
	Subtotal	\$1,806,531	

Area	Activity	Cost	Area Subtotal
	Contingency	\$180,653	
	Area Total	\$1,987,184	\$1,987,184
	Total Cost Estimates		<u>\$12,969,024</u><u>13,692,607</u>

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SECTION III
CLOSURE COSTS BY AREA

Container Storage Area - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Demolition and Removal of Containment System	\$0
2	Removal of Soil	\$0
3	Backfill	\$0
4	Decontamination	<u>\$214,313,216,786</u>
5	Sampling and Analysis	<u>\$59,816,61,220</u>
6	Monitoring Well Installation	\$0
7	Transportation	<u>\$1,181,250,1,207,584</u>
8	Treatment and Disposal	<u>\$4,570,250,5,166,517</u>
9	SUBTOTAL OF CLOSURE COSTS	<u>\$6,025,629,6,652,107</u>
10	Engineering Expenses	<u>\$301,281,332,605</u>
11	Certification of Closure	\$18,173
12	SUBTOTAL OF CLOSURE COSTS	<u>\$6,345,083,7,002,885</u>
13	Contingency Allowance	<u>\$634,508,700,289</u>
14	Landfill Closure	\$0
	TOTALS	<u>\$6,979,591,7,703,174</u>

Container Storage

Activity Number

4. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination:

Costs detailed in Section V. Decontamination Cost by Area and Task ~~\$214,313~~**\$216,786** This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall. ~~231/1262~~~~234/1265~~ x \$~~1,170,838~~~~1,171,941~~ = ~~214,313~~**\$216,786**

5. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for

analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Container Management areas are comprised of several storage units. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples each Buildings 68 and 69	= 30 samples
70 samples each E1 and E5	= 140
25 samples each E2, E3, E4, E6, E7	= 125
35 samples from breezeway	= 35
10 samples from the shred tower storage area	= <u>10</u>
Total Wipe samples	340

340 wipe sample locations x \$125/wipe = **\$42,500**

B. Rinse Samples (for RCRA confirmation)

1 sample each Building 68 and 69	= 2 samples
2 samples each E2, E3, E4, E6, E7	= 10
5 samples each E1 and E5	= 10
3 samples from breezeway	= 3
2 samples from bulk solids pad	= 2
3 samples from slag pad	= 3
1 sample each E-1, E-5, E-4 docks	= 3
3 samples from truck unloading direct burn	= 3
1 sample from the shred tower storage area	= 1
<u>1 sample from each magazine</u>	<u>= 3</u>
Total rinsewater samples	<u>3740</u>

3740 sample locations x \$468/sample = **\$17,316,18,720**

C. Total Sampling Cost

\$42,500 wipe samples + **\$17,316,18,720** rinse samples = **\$59,81661,220**

7. Transportation of Waste in Storage

Note 1: Containerized Waste

Mileage rates based on \$3.75 per loaded mile, the prevailing non-discounted transportation rate for hazardous waste cargo. Included mileage of 1,750 from

Aragonite, UT to Deer Park, TX. Actual transportation quotes may result in a lower mileage rate.

Note 2: Waste from Magazines

Mileage rates based on \$5.50 per loaded mile, the prevailing non-discounted transportation rate for explosive waste cargo. Included mileage of 1,596 from Aragonite, UT to Colfax, LA. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste in Drums

14,397 drums of waste/80 drums per truck = 180 truckloads of drums
180 drum loads x 1,750 miles from Aragonite, UT to Deer Park, TX x \$3.75/mile
= **\$1,181,250**

B. Transportation of Waste from Magazines on Pallets

90,000 pounds of waste/30,000 pounds per shipment = 3 truckloads
3 loads x 1,596 miles from Aragonite, UT to Colfax, LA x \$5.50/mile = \$26,334

C. Total Transportation Cost

\$1,181,250 containers + \$26,334 = \$1,207,584

8. Treatment and Disposal

Note 1:

Waste volumes and containment surfaces are based on permitted capacities and areas. The Container Storage Areas(s) have a combined maximum permitted capacity of 14,397 drums (55-gal). This capacity includes an equivalent of 213 55-gallon containers for the compressed gas cylinder capacity but does not include any capacity from the bulk solids/sludge pad, truck unloading or drive through/drive through corrosive direct burn stations as the capacity for these units is considered as bulk solids and bulk liquids and is included in the cost estimate for closure of the bulk solids tanks and the tank farm. The explosive waste magazines have a combined storage capacity of 90,000 pounds and a combined total containment surface area of 1,200 sq. ft. The total cumulative containment surface area of all of the container storage areas is ~~117,332~~118,532 sq.ft.

Note 2:

Disposal rate for material in storage calculated at \$0.55/lb (or \$1,099/ton) based on a weighted average of gate rates of similar drummed waste at the CH-Deer Park, TX incineration facility.

Note 3:

Disposal rate for waste explosives in storage in the magazines calculated at \$6.60/lb based upon rates for similar wastes at the CH-Colfax, LA thermal treatment facility.

Note 34:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 45:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$874 per month. Tanks will be placed in suitable containment during use.

Note 56:

Bulk liquid transportation and disposal rate of \$1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000-gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Disposal of Waste in Drums

14,397 drums x 55 gal/drum/7.48 gal/ft³/27 ft³/yd = 3,921 cu.yd waste
3,921 cu.yd waste for disposal x 1.00775 tons/cu.yd = 3,952 tons of waste in drums for disposal
3,952 tons x \$1,099/ton disposal cost = **\$4,343,248**

B. Disposal of Explosive Waste in Magazines

30,000 lbs x 3 Magazines = 90,000 lbs
90,000 lbs x \$6.60/lb disposal cost = \$594,000

BC. Transportation and Disposal of Decontamination Fluid

~~117,332~~ 118,532 sq. ft containment x 1.0 gal/sq. ft decon fluid = ~~117,332~~ 118,532 gallons
~~117,332~~ 118,532 gal x \$1.89/gal disposal cost = ~~\$221,758~~ \$224,025

CD. Tank Rental

three 20,000-gallon frac tanks required for two months
3 tanks x \$874/month x 2 months = **\$5,244**

DE. Total Treatment and Disposal Cost

$\$4,343,248 + \underline{\$594,000} + \underline{\$221,758,224,025} + \$5,244 = \underline{\$4,570,250,166,517}$

9. Sub-Total of Area Closure Costs

$\underline{\$214,313,216,786} + \underline{\$59,816,61,220} + \underline{\$1,181,250,1,207,584} + \underline{\$4,570,250,166,517} = \underline{\$6,025,629,652,107}$

10. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = $\underline{\$301,281,332,605}$

11. Certification of Closure

A. Engineering Certification - Professional Engineer
100 hours x \$156/hr = $\underline{\$15,600}$

B. Engineering Certification - Direct costs = $\underline{\$2,573}$

C. Total Engineering Certification
 $\$15,600 + \$2,573 = \underline{\$18,173}$

12. Sub-Total of Area Closure Costs

$\underline{\$6,025,629,652,107} + \underline{\$301,281,332,605} + \$18,173 = \underline{\$6,345,087,002,885}$

13. Contingency Allowance

A. Contingency Allowance equal to 10% of Subtotal = $\underline{\$634,508,700,289}$

Total Area Closure Cost = $\underline{\$6,979,591,703,174}$

Tank Farm - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Removal of Waste	\$13,097
2	Tank System Purging	Incl w/decon
3	Flushing Tank and Piping	Incl w/decon
4	Excavation, Disassembly, and Loading	\$0
5	Demolition and Removal of Containment System	\$0
6	Removal of Soil	\$0
7	Backfill	\$0
8	Decontamination	\$273,444
9	Sampling and Analysis	\$27,110
10	Monitoring Well Installation	\$0
11	Transportation	\$244,185
12	Treatment and Disposal	\$904,497
13	SUBTOTAL OF CLOSURE COSTS	\$1,462,333
14	Engineering Expenses	\$73,117
15	Certification of Closure	\$18,173
16	SUBTOTAL OF CLOSURE COSTS	\$1,553,623
17	Contingency Allowance	\$155,362
18	Landfill Closure	\$0

	TOTALS	\$1,708,985
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Tank Farm

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted tank farm capacity of 461,504 gallons. Additionally, the capacity from the drive through/drive through corrosive and truck unloading direct burn stations adds five 7500-gallon tankers or 37,500 additional gallons of waste for a total of 499,004 gallons. The tank farm has 18,900 sq.ft. of surface area. This area does not include the drive through/drive through corrosive and truck unloading direct burn station surface areas as they are included in the container storage area closure.

A. Remove Tank Farm Inventory

Remove 499,004 gallons from storage - 30 mandays

30 mandays x \$31/hr x 8 hrs/day = \$7,440

Equipment - lump sum = \$5,657

Labor plus equipment total = **\$13,097**

2. Tank System Purging

Included in Decontamination Costs

3. Flush Tank and Piping

Included in Decontamination Costs

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Tanks and piping will be emptied, flushed, then rinsed prior to dismantling. Tanks and piping will then be cut up for disposal as RCRA waste. Volume of waste based on tank volumes, and pipe system lineal footage.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **\$273,444**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Tank Farm is comprised of four identical containment areas, and two pump houses. These unit containment areas will be sampled individually. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

25 samples per containment area	= 100 samples
10 samples per pump house	= 20 samples
10 miscellaneous structural steel samples	= 10 samples

12 miscellaneous piping, strainer, pump samples = $\frac{12}{142}$ samples
Total wipe samples

142 wipe sample locations x \$125/wipe = **\$17,750**

B. Rinse Samples (for RCRA confirmation)

4 samples each for four containment areas = 16 samples
2 samples each for two pump houses = $\frac{4}{20}$ samples
Total rinsewater samples

20 sample locations x \$468/sample = **\$9,360**

C. Total Sampling Cost

\$17,750 wipe samples + \$9,360 rinse samples = **\$27,110**

11. Transportation

Note 1:

Mileage rates based on \$3.75 per loaded mile, the prevailing non-discounted transportation rate for hazardous waste cargo. Included mileage of 1750 from Aragonite, UT to Deer Park, TX. Actual transportation quotes may result in a lower mileage rate.

A. Transportation of Waste in Drums

It is expected that approximately 34 drums of waste from the tank farm will be removed.

34 drums of waste/80 drums per truck = 1 truckload of drums

1 drum load x 1750 miles from Aragonite, UT to Deer Park, TX x \$3.75/mile = **\$6,562**

B. Transportation of Bulk Liquid in Storage, and Flush (by Rail tanker)

461,504-gallon tank farm capacity + 30% flush to remove PCBs + 37,500 gallons from direct burn stations = 637,455 gallons total

637,455 gal/20,000 gal per railcar = 32 railcars

32 railcars x \$7,303 per load from Aragonite, UT to Deer Park, TX = **\$233,696**

C. Transportation of Bulk Waste (tank scrap in roll-off boxes)

16 tanks x 10,000 lb per tank = 160,000 lb steel scrap from tank dismantling

160,000/15,000 per box = 10.5 loads

assume same weight, volume in pipe, pumps, and strainers = 10.5 loads

total number of roll-off box loads = 21 boxes

21 roll-off boxes x \$187 per load to transport 25 miles to Grassy Mountain = **\$3,927**

D. Total Transportation Costs

$$\$6,562 + \$233,696 + \$3,927 = \mathbf{\$244,185}$$

12. Treatment and Disposal

Note 1:

Volumes of waste in inventory based on permitted tank farm capacity, plus piping capacity, totaling 461,504 gallons. Additionally, 37,500 gallons of direct burn tanker station capacity will be included as waste to be managed under tank farm closure. The tank farm has 18,900 sq.ft. of surface area.

Note 2:

Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste, plus 10,000 gallons rinsate generated from rinse of tank interiors prior to dismantling. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Volume of waste for disposal includes permitted capacity of tank system (including pipe) plus 30% by volume to account for flush of system to remove TSCA designation plus 37,500 gallons of the direct burn stations capacity. Three (3) flushes of 10% by volume are assumed, although some flush may be re-used if tested to contain less than 50 ppm PCB.

Note 4:

Disposal prices calculated at \$0.14/lb (\$280/ton) for organic waste, and \$0.184/lb (\$368/ton) for aqueous waste, based on gate rate at CH-Deer Park, TX incineration facility.

Note 5:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$874 per month. Tanks will be placed in suitable containment during use.

Note 6:

Bulk liquid transportation and disposal rate of \$1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000-gallon tank car. For details of transportation and disposal rates, see Section IV of this document.

- A. Treatment and Disposal of Aqueous Waste in Bulk
 114,755 gallons capacity + 30 % flush by volume + 18,750 gal from direct burn =
 167,932-gal total
 167,932 gal/7.48 gal/ft³/27 cu ft/cu. yd = 831.5 cu. yd.
 831.5 cu. yd waste for disposal (including flush) x 0.843 tons/cu. yd = 701 tons
 for disposal
 701 tons x \$368/ton disposal cost = **\$257,968**
- B. Treatment and Disposal of High BTU Waste in Bulk
 346,749 gallons capacity + 30% flush by volume + 18,750 gal from direct burn =
 469,524 gal
 469,524 gal/7.48 gal/ft³/27 cu ft./cu. yd = 2,324.8 cu. yd.
 2,324.8 cu. yd waste for disposal (including flush) x 0.843 tons/cu.yd = 1,959.8
 tons for disposal
 1,959.8 tons x \$280/ton disposal cost = **\$548,744**
- C. Treatment and Disposal of Tank and Pipe Scrap Metal
 16 tanks at 10,000 per tank plus same weight in pipe, pumps = 320,000 lbs
 320,000 lbs/2,000 lb per ton = 160 tons for disposal (landfill)
 160 tons x \$237/ton disposal cost = **\$37,920**
- D. Transportation and Disposal of Decontamination Fluid
 18,900 sq.ft tank farm containment x 1.0 gal./ft² rinsate = 18,900 gal
 rinsate generated from tank rinse out prior to dismantling = 10,000 gal
 total decontamination fluid volume = 28,900 gal
 28,900-gal x \$1.89/gal transportation and disposal = **\$54,621**
- E. Tank Rental
 three 20,000-gallon frac tanks required for two months
 3 tanks x \$874/month x 2 months = **\$5,244**
- F. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
 \$257,968 + \$548,744 + \$37,920 + \$54,621 + \$5,244 = **\$904,497**

13. Subtotal of Closure Costs

$$\$13,097 + \$273,444 + \$27,110 + \$244,185 + \$904,497 = \mathbf{\$1,462,333}$$

14. Engineering Expense

- A. Engineering Expense equal to 5% of Subtotal = **\$73,117**

15. Certification of Closure

A. Engineering Certification - Professional Engineer
100 hours x \$156/hr = **\$15,600**

B. Engineering Certification - Direct Costs = **\$2,573**

C. Total Engineering Certification
\$15,600 + \$2,573 = **\$18,173**

16. Subtotal of Closure Costs

\$1,462,333 + \$73,117 + \$18,173 = **\$1,553,623**

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **\$155,362**

Total Area Closure Cost = \$1,708,985

Bulk Solids - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Removal of Waste	\$6,498
2	Tank System Purging	\$0
3	Flushing Tank and Piping	\$0
4	Excavation, Disassembly, and Loading	\$0
5	Demolition and Removal of Containment System	\$0
6	Removal of Soil	\$0
7	Backfill	\$0
8	Decontamination	\$118,121
9	Sampling and Analysis	\$22,026
10	Monitoring Well Installation	\$0
11	Transportation	\$107,415
12	Treatment and Disposal	\$1,406,724
13	SUBTOTAL OF CLOSURE COSTS	\$1,660,784
14	Engineering Expenses	\$83,039
15	Certification of Closure	\$10,484
16	SUBTOTAL OF CLOSURE COSTS	\$1,754,307
17	Contingency Allowance	\$175,431
18	Landfill Closure	\$0
	TOTALS	\$1,929,738

Bulk Solids

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted bulk tank capacity of 229,000 gallons. Also included as bulk solids capacity is the capacity in bulk containers of the bulk solids/sludge pad. This adds an additional 23,760 gallons of waste to be managed for a combined total of 252,760 gallons. The tanks have 7,057 sq.ft. of surface area. This area does not include the bulk solids/sludge pad surface areas as they are included in the container storage area closure.

- A. Remove equivalent of 229,000 gallons of waste from bulk solids tanks and 23,760 gallons from the bulk solids/sludge pad - 20 mandays
- B. 20 mandays x \$31/hr x 8 hrs/day = \$4,960
Equipment - lump sum = \$1,538
Labor plus equipment total = **\$6,498**

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 30,000 gallons. This rate is primarily based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **\$118,121**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinse water sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinse water samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Bulk Solids Building is comprised of three tanks, and one containment area. These tanks and containment area will be wipe sampled individually. Additionally, core samples will be taken from the concrete walls of the building. Rinsate samples will be taken from tanks, and containment. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

15 samples per tank	= 45 samples
5 samples from containment/vault	= <u>5</u> samples
total wipe samples	= 50

50 wipe sample locations x \$125/wipe = **\$6,250**

B. Rinse Samples (for RCRA confirmation)

1 rinse sample per tank	= 4 samples
3 rinse samples from containment	= <u>3</u> samples
total rinse samples	= 7

7 sample locations x \$468/sample = **\$3,276**

C. Concrete Core Samples (for PCB Confirmation)

20 samples per wall	= 80 core samples
20 samples from various floor surfaces	= <u>20</u> core samples
total core samples	= 100

100 core sample locations x \$125/sample = **\$12,500**

D. Total Sampling Cost

\$6,250 wipe samples + \$3,276 rinse samples + \$12,500 core samples = **\$22,026**

11. Transportation

Note 1:

Bulk solids wastes will be bulked into 20 cu yd roll-off boxes, and transported by rail to Deer Park, TX for disposal. A transportation cost of \$1,705 per box is used as per transportation work-up in Section IV of this document.

A. Transportation of Bulk Waste in Storage

252,760 gallons permitted capacity

252,760 gallons/7.48 gal per cu.ft. = 33,792 cu. ft. waste

33,792 cu. ft. waste/27 cu.ft. per cu.yd. = 1,252 cu.yd.

1,252 cu.yd/20 cu. yd. per roll-off box = 63 roll-off boxes

63 roll-off boxes x \$1,705 per load to transport by rail to Deer Park, TX =
\$107,415

12. Treatment and Disposal

Note 1:

Rinsate generation is expected to be approximately 30,000 gallons. This rate is based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 2:

Disposal of bulk solids removed from inventory is calculated at \$0.408/lb (\$816/ton) based on gate rates at the CH - Deer Park incineration facility.

Note 3:

Walls and ceiling will be rinsed to remove visible dust, and contaminants. Tank liners (metal) will be decontaminated using ultra high-pressure water blasting, or other suitable methods. All visible waste residues will be removed.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of \$1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000-gallon tank car. For details of transportation rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage

252,760 gallons/7.48 gal/cu ft/27 cu.ft/cu.yd. = 1,252 cu.yd.
1,252 cu.yd x 1.318 ton per cu.yd. = 1,651 tons for disposal
1,651 tons x \$816/ton disposal cost = **\$1,347,216**

B. Transportation and Disposal of Decontamination Fluid

Estimated volume of decontamination fluid generated - 30,000 gallons
30,000-gal x \$1.89/gal disposal cost (incl. Transportation) = **\$56,700**

C. Tank Rental

two 20,000-gallon frac tanks required for one months
2 tanks x \$874/month x 1 month = **\$1,748**

D. Cost to Pump Fluid to Frac Tanks

Labor - 30 hrs x \$31/hr = \$930
Equipment - lump sum \$130
Total Cost to Pump Fluid \$930 + \$130 = **\$1,060**

E. Total Cost of Treatment and Disposal (including decontamination fluid T&D)

\$1,347,216 + \$56,700 + \$1,748 + \$1,060 = **\$1,406,724**

13. Subtotal of Closure Costs

\$6,498 + \$118,121 + \$22,026 + \$107,415 + \$1,406,724 = **\$1,660,784**

14. Engineering Expense

A. Engineering Expense equal to 5% of Subtotal = **\$83,039**

15. Certification of Closure

A. Engineering Certification - Professional Engineer
60 hours x \$156/hr = **\$9,360**

B. Engineering Certification - Direct Costs = **\$1,124**

C. Total Engineering Certification

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$$\$9,360 + \$1,124 = \mathbf{\$10,484}$$

16. Subtotal of Closure Costs

$$\$1,660,784 + \$83,039 + \$10,484 = \mathbf{\$1,754,307}$$

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **\$175,431**

Total Area Closure Cost = \$1,929,738

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Sludge Tanks - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Removal of Waste	\$9,326
2	Tank System Purging	\$0
3	Flushing Tank and Piping	\$0
4	Excavation, Disassembly, and Loading	\$0
5	Demolition and Removal of Containment System	\$0
6	Removal of Soil	\$0
7	Backfill	\$0
8	Decontamination	\$60,455
9	Sampling and Analysis	\$5,622
10	Monitoring Well Installation	\$0
11	Transportation	\$14,606
12	Treatment and Disposal	\$220,405
13	SUBTOTAL OF CLOSURE COSTS	\$310,414
14	Engineering Expenses	\$15,521
15	Certification of Closure	\$4,543
16	SUBTOTAL OF CLOSURE COSTS	\$330,478
17	Contingency Allowance	\$33,048
18	Landfill Closure	\$0

	TOTALS	\$363,526
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Sludge Tanks

Activity Number

1. Inventory Removal

Note 1:

Volumes of waste in inventory based on permitted sludge tank system capacity of 38,570 gallons. The tanks have 2,903 sq.ft. of surface area.

- A. Remove 38,570 gallons of waste from bulk sludge tanks - 30 mandays
 30 mandays x \$31/hr x 8 hrs/day = \$7,440
 Equipment - lump sum = \$1,886
 Labor plus equipment total = **\$9,326**

8. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from storage and process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

Note 2:

Rinsate generation is expected to be approximately 16,000 gallons. This rate is primarily based on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **\$60,455**. This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall.

9. Sampling

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

The Sludge Tank Area is comprised of two tanks and one containment vault. The tanks and vault will be wipe sampled individually, with ancillary equipment sampled, as necessary. Rinsate samples will be taken from the tanks, and vault. Quantities of samples by unit location are indicated below.

A. Wipe Samples (for PCB Confirmation)

5 wipe samples on tanks	= 5 samples
20 wipes on containment vault	= 20 samples
5 samples on ancillary equipment	= 5 samples
Total wipe samples	30

30 wipe sample locations x \$125/wipe = **\$3,750**

B. Rinse Samples (for RCRA confirmation)

2 rinse samples from tank system	= 2 samples
2 samples from vault area	= 2 samples
total samples	4

4 sample locations x \$468/sample = **\$1,872**

C. Total Sampling Cost

\$3,750 wipe samples + \$1,872 rinse samples = **\$5,622**

11. Transportation

Note 1:

Sludge will be bulked into 20,000-gallon rail cars, and transported by rail to Deer Park, TX for disposal. A transportation cost of \$7,303 per tanker is used as per the transportation work-up in Section IV of this document.

A. Transportation of Bulk Waste in Storage

38,570 gallons permitted capacity

38,570 gallons/20,000 gallons per rail tanker load = 2 rail tanker loads

2 rail tanker loads x \$7,303 per load to Deer Park Texas = **\$14,606**

12. Treatment and Disposal

Note 1:

Volumes of waste in inventory based on permitted sludge tank system capacity and truck unloading direct burn station capacity of 38,570 gallons. The tanks and piping have a surface area of 2903 sq ft with the containment vault having 1,173 sq ft of surface area.

Note 2:

Rinsate generation is expected to be approximately 16,000 gallons. It is estimated that 1,500 gallons of rinsate will be generated from cleaning vault surfaces, and 14,500 gallons will be generated from cleaning the tank interior due to high solids build-up. This rate is based primarily on generation rates of decon fluid from the Clive facility, and from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Disposal of bulk sludge removed from inventory is calculated at \$0.49/lb (\$980/ton) based on gate rates at the CH Deer Park incineration facility.

Note 4:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$874 per month. Tanks will be placed in suitable containment during use.

Note 5:

Bulk liquid transportation and disposal rate of \$1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000-gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

A. Treatment and Disposal of Waste in Storage

38,570 gallons permitted capacity/7.48 cu.ft./gal/27 cu.ft./cu.yd. = 191 cu.yd.

191 cu.yd x 1.0135 ton per cu.yd. = 193.6 tons for disposal
193.6 tons x \$980/ton disposal cost = **\$189,728**

B. Transportation and Disposal of Decontamination Fluid

Estimated volume of decontamination fluid generated - 16,000 gallons
16,000-gal x \$1.89/gal disposal cost (incl. Transportation) = **\$30,240**

C. Tank Rental

one 20,000-gallon frac tanks required for one-half month
1 tank x \$874/month x 0.5 months = **\$437**

D. Total Cost of Treatment and Disposal (including decontamination fluid T&D)

\$189,728 + \$30,240 + \$437 = **\$220,405**

13. Subtotal of Closure Costs

\$9,326 + \$60,455 + \$5,622 + \$14,606 + \$220,405 = **\$310,414**

14. Engineering Expenses

A. Engineering Expense equal to 5% of Subtotal = **\$15,521**

15. Certification of Closure

A. Engineering Certification - Professional Engineer

24 hours x \$156/hr = **\$3,744**

B. Engineering Certification - Direct Costs = **\$799**

C. Total Engineering Certification

\$3,744 + \$799 = **\$4,543**

16. Subtotal of Closure Costs

\$310,414 + \$15,521 + \$4,543 = **\$330,478**

17. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **\$33,048**

Total Area Closure Cost \$363,526

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Kiln - General Summary Sheet

SUMMARY TABLE		
Activity Number	Activity	Activity Cost
1	Removal of Waste Residue	\$980,696
2	Decontamination of the Unit	Incl in decon
3	Disassembly of Ancillary Piping	Incl in decon
4	Demolition and Removal	\$0
5	Removal of Soil	\$0
6	Backfill	\$0
7	Decontamination	\$387,747
8	Sampling and Analysis	\$129,828
9	Monitoring Well Installation	\$0
10	Transportation	\$31,977
11	Treatment and Disposal	\$172,949
12	SUBTOTAL OF CLOSURE COSTS	\$1,703,197
13	Engineering Expenses	\$85,160
14	Certification of Closure	\$18,174
15	SUBTOTAL OF CLOSURE COSTS	\$1,806,531
16	Contingency Allowance	\$180,653
17	Landfill Closure	\$0
		\$1,987,184

	TOTALS	
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Kiln System

Activity Number

1. Inventory Removal

A. Remove and dispose of liquid from scrubber

Scrubber liquid volume made up of:

4 tanks at 14,000 each	= 56,000 gal
1 WESP tank	= 1,000 gal
Total scrubber liquid volume	57,000 gal

Labor - 30 mandays x \$31/hr x 8 hrs/day = **\$7,440**

Equipment - lump sum = **\$1,608**

Disposal of Liquid - 57,000-gal x \$1.89/gal (T&D) = **\$107,730**

B. Remove 4,720 cu.yd. of non-liquid waste residues

Non-liquid waste residue volume made up of :

112 boxes slag at 30 yd ³ each (normal operations inventory)	= 3,360 yd ³
18 boxes brick at 30 yd ³ each (from turn-around records)	= 540 yd ³
31 boxes of ash at 20 yd ³ each (normal operations inventory)	= 620 yd ³
9 boxes at 20 yd ³ each from baghouse, spray drier cleanout	= 180 yd ³
1 box at 20 yd ³ from shred tower cleanout	= 20 yd ³
Total volume of non-liquid waste residues (170 boxes)	4,720 yd³

Labor - 302 mandays x \$31/hr x 8 hrs/day = **\$74,896**

Equipment - lump sum **\$33,940**

C. Dispose of 4,720 cu.yd of non-liquid waste (volume estimated above)

4,720 cu.yd x 0.675 tons per cu.yd = 3,186 tons.

3,186 tons x \$237/ton disposal cost = **\$755,082**

D. Total Inventory Removal and Treatment Cost

\$7,440 + \$1,608 + \$107,730 + \$74,896 + \$33,940 + \$755,082 = \$980,696

7. Decontamination

Note 1:

Decontamination costs are detailed in Section V of this document. After waste is removed from process areas, units will be decontaminated using appropriate equipment, such as ultra-high pressure water blaster, or other suitable means.

A. Decontamination

Costs detailed in Section V. Decontamination Cost by Area and Task **\$387,747**
This cost is calculated by multiplying the overall total decontamination cost in Section V by the ratio of mandays for this task to the total mandays required overall. For this task however, the labor and equipment charges for the scrubber liquid and non-liquid residue removal are already included in Activities 1.A. and 1.B. above and should be deducted from the calculation using the numbers in Section V in order to avoid duplicating the cost, i.e., $545 \text{ mandays} / 1262 \text{ mandays} \times \$1,170,838 = \$505,631$; $\$505,631 - \$7,440 - \$1,608 - \$74,896 - \$33,940 = 387,747$.

8. Sampling and Analysis

Note 1:

To be consistent with the analytical requirements for the Clive Incineration Facility, PCB wipes will be used to verify PCB decontamination. No RCRA analysis will be performed on wipe samples. Rinsewater sample will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI of this document) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in the quotation reference section. Sample quantities by location are indicated below.

Note 2:

Rinsewater samples will be taken to verify RCRA decontamination, and Clive Closure Table I-1.3 (see Section VI) parameters will be assumed. The cost for analysis has been based on quotations from STL, copies of which are enclosed in Section IV of this document. Sample locations are indicated below.

Note 3:

Due to the large surface area of the units comprising the Kiln Area, several units, and corresponding containment areas will be wipe sampled. Sample quantities by area location are indicated below.

A. Wipe Samples (for PCB Confirmation)

25 each for kiln and afterburner feed skids, slag discharge, "A" damper	= 100
10 each for the 8 kiln area units	= 80
10 for each of 6 kiln area containment area	= 60

30 for direct burn area	= 30
30 for random structural wipes in kiln area	= 30
30 for random structural wipes in shred tower area	= 30
10 each for the two Komar shredders	= <u>20</u>
Total number of wipe samples from Kiln area	350

350 wipe sample locations x \$125/wipe = **\$43,750**

B. Rinse Samples (for RCRA confirmation)

1 rinse sample from each of the 6 containment berms in kiln area	= 6
1 rinse sample from each of the 8 kiln area units	= 8
1 rinse from the direct burn area containment	= 1
1 rinse sample from each of the 2 Komar shredders	= 2
1 rinse sample from the shred tower airlock	= 1
1 rinse sample from the shred tower containment	= 1
1 rinse sample from the shred tower conveyor	= 1
1 rinse sample from the shred feed auger	= <u>1</u>
Total number of aqueous samples from kiln area	21

21 sample locations x \$468/sample = **\$9,828**

C. Non-aqueous Samples (concrete cores, brick samples)

200 brick samples from kiln, "a" damper	= 200
150 brick samples from SCC	= 150
20 samples from deslagger	= 20
20 samples from each of 5 pant leg sections	= 100
80 samples from spray drier	= 80
20 samples from accumulation areas	= 20
20 from parking area	= 20
10 random samples from kiln area	= 10
10 random samples from the shred tower area	= <u>10</u>
Total non-aqueous samples	610

610 samples x \$125/sample = **\$76,250**

D. Total Sampling Cost

\$43,750 wipe samples + \$9,828 rinse samples + \$76,250 non-aqueous samples =
\$129,828

10. Transportation

- A. Transportation of Bulk Liquids (scrubber water)
included in Task 1 - Inventory Removal
- B. Transportation of Bulk Waste Residue (ash, brick, shred tower residue)
171 debris boxes (from inventory) x \$187/ box to Grassy Mtn, UT = **\$31,977**
- C. Total Cost of Transportation of Waste
\$31,977

11. Treatment and Disposal

Note 1:

Brick removal labor is included in the costs for inventory removal. These costs are detailed in Section V of this document.

Note 2:

An area of 87,148 sq ft requires decontamination. Rinsate generation is expected to be approximately 1.0 gallon per square foot of unit surface area which came in contact with waste. This rate is based on generation rates from similar decontamination efforts at other CH/SK facilities, including Clive. See table in Section IV of this document for rinsate generation summary table.

Note 3:

Frac tanks will be used to temporarily store the liquids generated during decontamination efforts. These tanks are commonly available, and typically contain 20,000 gallons per tank. These tanks are available at a non-discounted rate of \$874 per month. Tanks will be placed in suitable containment during use.

Note 4:

Bulk liquid transportation and disposal rate of \$1.89/gallon based on bulk transport to Deer Park, TX by rail in a 20,000-gallon tank car. For details of transportation, and disposal rates, see Section IV of this document.

- A. Treatment and Disposal of Waste in Storage
included in Task 1 - Inventory Removal
- B. Transportation and Disposal of Decontamination Fluid
Estimated volume of decontamination fluid generated – 87,148 gallons
87,148-gal x \$1.89/gal disposal cost (incl. Transportation) = **\$172,949**
- C. Tank Rental

four 20,000-gallon frac tanks required for two months
4 tanks x \$874/month x 2 months = **\$6,992**

D. Cost to Pump Liquid to Frac Tank
labor- 4 mandays x \$31/hr x 8 hrs/day = **\$992**
equipment - lump sum **\$255**

E. Total Cost of Treatment and Disposal (including decontamination fluid T&D)
\$164,710 + \$6,992 + \$992 + \$255 = **\$172,949**

12. Subtotal of Closure Costs

\$980,696 + \$387,747 + \$129,828 + \$31,977 + \$172,949 = **\$1,703,197**

13. Engineering Expenses

A. Engineering Expense equal to 5% of Subtotal = **\$85,160**

14. Certification of Closure

A. Engineering Certification - Professional Engineer
96 hours x \$156/hr = **\$14,976**

B. Engineering Certification - Direct Costs = **\$3,198**

C. Total Engineering Certification
\$14,976 + \$3,198 = **\$18,174**

15. Subtotal of Closure Costs

\$1,703,197 + \$85,160 + \$18,174 = **\$1,806,531**

16. Contingency Allowance

A. Contingency allowance equal to 10% of Subtotal = **\$180,653**

Total Area Closure Cost = \$1,987,184

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SECTION IV
QUOTES/COST BACKUP

2001 Transportation and Disposal Rates

1. Bulk Liquid Waste by Rail Tanker Car to Deer Park, Texas

Cost to transload from Aragonite to Clive 4 tankers, \$300/load:	\$1,200
Cost to move by rail tanker, Clive UT to Deer Park, TX:	\$4,584
Tank car rental cost \$400/month (1 month round trip):	<u>\$400</u>
Total cost for one load:	\$5,847

20,000-gallon capacity tankers/\$5,847	
Cost per gallon for rail transport	\$0.29/gal
Cost per gallon for water disposal (\$0.147/lb x 8.3 lb/gal)	<u>\$1.22/gal</u>
Total Transportation and Disposal Cost - Aqueous Waste	\$1.51/gal

2. Roll-Off Boxes by Rail Car to Deer Park, Texas

Cost to Transload from Aragonite to Clive (per box)	\$150/box
Cost to Load onto rail car	\$ 75/box
Cost to Transport by rail from Clive, UT to Deer Park, TX	\$1,065/box
Cost to Unload box at Deer Park plant	<u>\$ 75/box</u>
Total Transportation Cost by Rail for Solids in Roll-offs	\$1,365/box

3. Roll-Off Boxes by Truck to Grassy Mountain

Truck Cost of \$600/day, 4 loads per day	\$150/box
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Average Incineration Prices utilized in Estimates:

Bulk Water:	\$0.147/lb
Bulk Organics:	\$0.110/lb
Bulk Solids:	\$0.327/lb
Bulk Debris:	\$0.378/lb
Sludge:	\$0.397/lb
Drums:	

Using a weighted average of the various waste types \$0.44/lb

Average landfill disposal prices utilized in estimates: \$190/ton

Over the road transportation cost: \$3.00/loaded mile

Road mileage to Deer Park, Texas: 1,750 miles

Price Quotation for Analytical Services

American Inc. / Safety-Kleen Ltd.

<u>Matrix</u>	<u>Parameter</u>	<u>Method</u>	<u>Unit Price</u>
Wipe	PCBs	8082	\$72.00
Solid (Pulverized Concrete)	PCBs	8082	72.00
Solid (Soil)	PCBs	8082	57.00
Water	PCBs	8082	57.00
Water	Total Metals	6010B/7470A	60.00
Water	Metals Digestion Fee		3.00
Water	Total Organic Halogens (TOX)	9020B	45.00
Water	Total Organic Carbons (TOC)	9060	23.00
Water	Total Cyanide	9012A	17.00
Water	Phenolics	9066	11.00
Water	Oil & Grease	1664A HEM	52.00

STL Denver Notes:

- This quotation is based upon delivering STL Denver's standard hardcopy report (narrative, sample results, standard batch QC) and electronic deliverable 21 calendar days after Sample Delivery Acceptance.
- Upon request, STL Denver will provide an Expanded Report (narrative, sample results, standard batch QC, associated raw data, chromatograms, run logs, etc). A 3% surcharge of the total analytical cost will be applied should this type of package be provided.
- Standard sample containers with preservatives, labels, chain of custody seals and shipping coolers will be provided at no additional charge given one week's notice. Rush shipping charges of \$50 per cooler will apply if less notice is provided.
- Sample disposal is provided at no charge. All samples with reportable levels of PCB, dioxin or mixed waste, or which are incompatible with our facility waste disposal profiles, will be returned to you for disposal.
- Standard batch QC includes method blank, Laboratory Control Sample (LCS), and matrix spikes (MS)/spike duplicates (MSD) for applicable methods. Please note that project specific QC samples (MS/MSD/duplicates) will be charged for at the quoted analytical unit price.
- See Attachment A for Analyte Lists and PQLs.

ATTACHMENT A

Analyte Lists / STL Denver Practical Quantitation Limits (PQLs)

<u>Matrix</u>	<u>Parameter</u>	<u>Method</u>	<u>PQL</u>	<u>Units</u>
Wipe	PCBs	8082		
	Aroclor 1016		1.0	ug/wipe
	Aroclor 1221		1.0	ug/wipe
	Aroclor 1232		1.0	ug/wipe
	Aroclor 1242		1.0	ug/wipe
	Aroclor 1248		1.0	ug/wipe
	Aroclor 1254		1.0	ug/wipe
	Aroclor 1260		1.0	ug/wipe
Solid	PCBs	8082		
	Aroclor 1016		33	ug/kg
	Aroclor 1221		33	ug/kg
	Aroclor 1232		33	ug/kg
	Aroclor 1242		33	ug/kg
	Aroclor 1248		33	ug/kg
	Aroclor 1254		33	ug/kg
	Aroclor 1260		33	ug/kg
Water	PCBs	8082		
	Aroclor 1016		1.0	ug/L
	Aroclor 1221		1.0	ug/L
	Aroclor 1232		1.0	ug/L
	Aroclor 1242		1.0	ug/L
	Aroclor 1248		1.0	ug/L
	Aroclor 1254		1.0	ug/L
	Aroclor 1260		1.0	ug/L
Water	Total Metals			
	Arsenic	6010B	0.01	mg/L
	Barium	6010B	0.01	mg/L
	Cadmium	6010B	0.005	mg/L
	Copper	6010B	0.01	mg/L
	Lead	6010B	0.003	mg/L
	Mercury	7470A	0.0002	mg/L
	Selenium	6010B	0.005	mg/L
	Silver	6010B	0.01	mg/L
	Phenolics	9066	0.020	mg/L
Water	Total Cyanide	9012A	0.010	mg/L
Water	Oil & Grease	1664A HEM	5.0	mg/L
Water	Total Organic Carbons	9060	1.0	mg/L
Water	Total Organic Halogens	9020B	0.01	mg/L

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JUL 31 2001 11:42 FR UPRR INDUSTRIAL PRODS402 271 5104 TO 918015087517

P. 01/02

TO: Kelly Clark
FAX (801) 508-7517

FROM: Jack Nelson
UPRR
phone 402-271-2350
fax 402-271-5104

DATE: July 31, 2001



CONFIDENTIAL PRICE QUOTE

COMMODITY: Haz solid
STCC: 48106
FROM: Cave, UT
SERVING RR: UP
TO: Houston, TX (ramp)
SERVING RR: UP
ROUTE: UP
THRU RATE: \$1,065 per loaded 20' private container on RR flatcar (minimum three)
\$596 per empty 20' private container on RR flatcar (minimum three)

Please call with any questions.

*** TOTAL PAGE.003 ***

JUL 31 '01 13:47 FR

8019752525 TO 5532734

P.02

JUL 31 2001 11:42 AM UPRR INDUSTRIAL PRODS402 271 5184 TO 918015887617

P.02/02

TO: Kelly Clark
~~STCC (884) 663-6077~~

FROM: Jack Nelson *Jack*
UPRR
phone 402-271-2350
fax 402-271-5104

DATE: July 31, 2001



CONFIDENTIAL PRICE QUOTE

COMMODITY: Haz liquid
STCC: 49801
FROM: Clive, UT
SERVING RR: UP
TO: Deer Park, TX
SERVING RR: UP
ROUTE: UP
THRU RATE: \$4,247
EQUIPMENT: Private tankcars (zero mileage payload)

Please call with any questions.

*** TOTAL PAGE 02 ***

**SAFETY-KLEEN, INC. CLOSURE PROJECTS
CONTAINMENT AREA DECONTAMINATION**

NAME	FACILITY	NO.	EPA ID #	STATE	YEAR	CONTAINMENT AREA (S.F.)	DECON FLUIDS (GALS.)	RATE (GALS./S.F.)	CLOSURE STANDARD ACHIEVED
Safety-Kleen (Crowley), Inc. (1)		550	LAD 079 464 095	LA.	2000	35,440	26,173		YES
S-K Indianapolis, IN		864	IND 000815888	IN	1995	1231	1700		YES
S-K Portage, IN (1)		907	IND 000714428	IN	1994	3862	5242		YES
S-K South Bend, IN (1)		917	IND 000715474	IN	1995	8232	2775		YES
S-K Southaven, MS (1)		952	MSD 981030994	MS	1999	8965	7710		YES
S-K Edwardsville, KS (1)		916	KSD 980973515	KS	2001	3076	3685		YES
			Project Averages			56,636	49,285	0.9	

Notes: 1) Volume of decon fluids is total volume generated. Includes decon of equipment, tanks, walls, etc.

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SECTION V
DECONTAMINATION COSTS BY AREA AND TASK

Section V Decontamination Costs by Area and Task

Note:

The costs detailed in this section represent Engineering Estimates for the tasks described. The tasks, and associated durations, equipment, and project management requirements were determined after a facility walk through with compliance personnel, an examination of relevant closure and permit documents, and follow-up discussions. Some assumptions were made with respect to decontamination of surfaces and equipment with which Americon has specific experience. Recent experience includes closure of the Clive Incineration Facility, which has very similar process units, storage areas, and infrastructure. This facility is also within the Utah Department of Environmental Quality's jurisdiction, so consistent closure standards were assumed (see Section VI).

Pricing is representative of that generally available in the industry, and would currently be available from Americon, Inc. for a project of similar scope, complexity, and duration.

**Clean Harbors Aragonite
Plant Decontamination Task Duration Summary**

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
1. Container Storage				
	Drum Storage Buildings (2) and Buildings 68 and 69-North/South			
	Dismantle drum storage racks	11		
	Wash ceilings (concrete)	31		
	Wash Walls (concrete)	41		
	Wash front loading bays (both buildings)	10		
	Wash interior storage cells/secondary containment	29		
	Sample	9		
			131	
	Container Processing Area			
	Remove area equipment	4		
	Wash ceiling	8		
	Wash walls	12		
	Wash floor	8		
	Dismantle, wash decant area	12		
	Sample	4		
			48	
	Dock/Breezeway			
	Remove elevator/rollers	10		
	Lower level hoist decontamination	8		
	Sump cleanout	2		
	Dock wash	8		
	Breezeway Wash	6		

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
	Electrical isolation of conveyors	1		
	Ceiling wash	6		
	Miscellaneous demolition	3		
	Sample	2		
			46	
	Shred Tower Storage Area			
	Dismantle drum storage racks	2		
	Containment bin cleanout	2		
	Wash concrete under storage rack locations	1		
	Sample	1		
			6	
	<u>ATF Explosive Magazine Storage</u>			
	<u>Wash Ceilings</u>	<u>1</u>		
	<u>Wash Walls</u>	<u>1</u>		
	<u>Sample</u>	<u>1</u>		
			<u>3</u>	
	Container Storage Subtotal			<u>231234</u>
2. Tank Farm				
	Sample Station			
	Wash structure	3		
			3	
	Unload Building			
	Triple rinse pumps, piping	3		

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
	Isolate, pull pumps	4		
	Isolate, pull piping	6		
	Clean containment	4		
	Sample	2		
			19	
	Waste Tanks			
	Triple rinse tanks, piping	6		
	Isolate piping	3		
	Pull piping	2		
	Purge tanks	8		
	Muck out interior	40		
	Remove exterior structural	20		
	Remove tanks	8		
	Cut-up tanks for disposal	45		
	Clean containment	9		
			141	
	Pump Houses (2)			
	Triple rinse pumps, piping	4		
	Isolate, pull pumps	10		
	Isolate, pull piping	12		
	Clean containment	10		
	Sample	2		
			38	
	Blend Tanks			
	Triple rinse tanks, piping	3		
	Isolate, purge	5		
	Isolate, remove pumps	2		

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
	Remove piping	3		
	Muck out interior	8		
	Remove mixers (sectioned)	4		
	Top valves and piping	2		
	Remove exterior structural steel	6		
	Pull tanks	4		
	Cut-up tanks	10		
	Remove unload rack piping	2		
	Containment	3		
	Purge, pull O/H lines to incin feed rack	7		
			59	
	Carbon Adsorber			
	Remove packing for disposal	6		
	Remove tanks, piping, for disposal	8		
	Sample	2		
			16	
	Direct Burn Area			
	Purge piping, pull	4		
	Clean containment	4		
	Pull unloading pipes	2		
	Pull pumps	2		
	Wash bay	4		
	Sample	2		
			18	
	Tank Farm, Piping Subtotal			294

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
3. Bulk Solids				
	Bulk Solids Building			
	Rinse down ceiling, upper walls	10		
	Clean walls	28		
	Clean tanks	35		
	Sample	8		
			81	
	Shredder Area			
	Clean hopper, shelf	8		
	disassemble, clean shredder	8		
	sample	2		
			18	
	Drag Conveyor			
	Disassemble conveyor	6		
	Clean conveyor interior	6		
	Clean hopper, knife gates	6		
	Sample	2		
			20	
	Clean hpu mains	2		
	Pull small lines	2		
	Drain hpus, isolate	2		
	Isolate electrical	2		
			8	
	Bulk Solids Subtotal			127
4. Sludge Tanks				

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
	Sludge Tank – Small			
	Triple rinse	2		
	Muck out interior	6		
	Remove valves and piping	2		
	Wash tank exteriors	4		
	Pull tank	4		
	Cut-up tank	6		
	sample	2		
			26	
	Sludge Tank - Large			
	Triple rinse	3		
	Muck out interior	6		
	Wash interior	6		
	Remove valves and piping	4		
	Wash tank exteriors	4		
	Pull tank	4		
	Cut-up tank	10		
	Sample	2		
			39	
	Sludge Tanks Subtotal			65
5. Incineration Train				
	Deslagger			
	Pull out	2		
	Isolate, disconnect	4		

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
	Open housing, pull headgear	4		
	Pull head pulley	4		
	Pull belt, dispose	3		
	Cut-up shell for disposal	20		
	Gross area decontamination	4		
	Surrounding sump area decontamination	4		
	sample	2		
			47	
	Kiln Exterior			
	Clean exterior kiln drive	2		
	Clean ring gear	2		
	Clean from discharge to deslagger	2		
	Remove piping	16		
	Pull kiln face feed points	6		
			28	
	Kiln Interior			
	Remove brick, containerize	35		
	Clean interior	8		
	Sample	2		
			45	
	SCC			
	Clean area exterior	2		
	Remove feed piping	6		
	Remove burners	15		
	Remove SCC exterior sheathing	20		
	Push in SCC brick	35		
	Muck out brick into rolloffs	20		

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
	Clean structure	8		
	Sample	2		
			108	
	Kiln Feed Piping			
	Isolate, purge	2		
	Pull, cut piping	10		
			12	
	Ducting from SCC to Saturator			
	Cut refractory to release joints	8		
	Crane out ducts, including thermal vent	4		
	Remove duct refractory	20		
	Wash duct to scrap	4		
	Sample	4		
			40	
	Saturator			
	Pull packing, containerize	2		
	Pump solids, muck out bottom	4		
	Scaffold interior	4		
	Sample	2		
			12	
	Scrubber			
	Pull packing, muck out bottom	8		
	Scaffold interior	4		
	Clean interior	10		
	Sample	2		

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
			24	
	Spray Dryer			
	Remove residue	6		
	Isolate, remove piping	6		
	Remove, clean ducting	10		
	Clean discharge area	4		
	Sample	2		
			28	
	Baghouse			
	Clean inlet, outlet duct	6		
	Remove bags, cages	8		
	Clean/remove screw conveyors	12		
	Clean interior	10		
	Sample	2		
			38	
	Baghouse Residue Loadout Bldg			
	Clean conveyors	8		
	Clean loadout hoppers	4		
	Clean building structure	6		
	Clean containment	6		
	Sample	2		
			26	
	ESP			
	Isolate	1		
	Clean inlet, discharge ducting	4		
	Clean interior	6		
	Sample	2		

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
			13	
	ID Fans, Stack Inlet Ducting			
	Clean ID #1 fan inlet	2		
	Clean transition to ID fan # 2	2		
	Clean fan #2, outlet to sack	2		
	Clean bottom section of stack	2		
			8	
	Stack			
	Check condition of interior	1		
	De-erect	2		
	Clean interior	2		
	Sample	1		
			6	
	pH Adjustment Tanks			
	Isolate, drain	2		
	Clean, rinse	4		
	Remove piping, pumps	2		
			8	
	Shred Tower Area			
	Remove elevator towers	10		
	Hoist decontamination	8		
	Wash structure	3		
	Sump cleanout	2		
	Electrical isolation of conveyors	2		
	Sample	2		

Area	Task Description	Mandays/Task	Mandays/Task	Total Mandays
	Clean concrete pad	8		
	Miscellaneous demolition	3		
	Purge piping and pull	4		
	Wash airlock structure	8		
	Disassemble, clean shredder, upper	8		
	Disassemble, clean shredder, lower	8		
	Disassemble conveyor	6		
	Clean isolation gates	6		
	Sample	4		
	Clean hpu mains	2		
	Pull small lines	2		
	Drain hpus, isolate	2		
	Isolate electrical	2		
	Dismantle, wash feed auger	12		
			102	
	Incineration System Subtotal			545
	Area Totals	<u>12621265</u>	<u>12621265</u>	<u>12621265</u>

Decontamination Equipment and Supplies

Unit	Unit Qty	Item Description	Item Qty	Rate	Extension
		General Equipment			
Week	21	Pressure Washers w/Trailers	4	\$475	\$39,900
Week	21	Sand Blasting	2	\$525	\$22,050
Week	21	High Reach Fork Lift	1	\$1,149	\$24,129
Week	21	Fork Lifts (5,000 lbs)	2	\$275	\$11,550
Week	21	Shooting Boom Lift	1	\$1,343	\$28,203
Month	3	Vactor Truck (up to 176 hrs/mo)	1	\$9,993	\$29,979
Week	12	Vacuum Boxes	2	\$468	\$11,232
Hour	220	50-Ton Crane w/operator	1	\$75	\$16,500
Hour	220	100-Ton Crane w/operator	1	\$112	\$24,640
Week	20	Welding/Cutting and Supplies	2	\$219	\$8,760
Week	20	Trailers for Transporting Equipment on-site	1	\$75	\$1,500
Week	21	Storage Trailers for Equipment on-site	2	\$69	\$2,898
Month	4	Hydroblaster, 30,000 psi	1	\$12,491	\$49,964
LS	1	Mob, Demob, Permits and Misc Expenses	1	\$2,498	\$2,498
Week	21	Air Compressors	2	\$381	\$16,002
Week	21	Trucks	2	\$344	\$14,448
Week	12	Koppus Blowers	2	\$75	\$1,800
Week	21	Scaffolding	1	\$187	\$3,927
		Subtotal			\$309,980
		Supplies			
Manday	1	PPE	1,540	\$25	\$38,500
Drums	25	Drums of Detergents	1	\$625	\$15,625
Week	20	Small Tools	1	\$250	\$5,000
Week	21	Sampling Supplies	1	\$156	\$3,276
Bag	1	Bag Grit for Sand Blasting	710	\$10	\$7,100
Roll	1	Absorbent Mats	45	\$137	\$6,165
Roll	1	Plastic	220	\$75	\$16,500
Case	1	Duct Tape	25	\$156	\$3,900
Each	1	Drums	275	\$37	\$10,175
Roll	1	Drum Liner	55	\$87	\$4,785
		Subtotal			\$111,026

		Total			\$421,006
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Decontamination Project Administration

Unit	Unit Quantity	Item Description	Item Quantity	Rate	Extension
		Project Management Personnel			
Hourly	700	Project Manager	1	\$81	\$56,700
Hourly	900	Field Supervisor	1	\$40	\$36,000
Hourly	900	Quality Assurance Officer	1	\$37	\$33,300
Hourly	500	Clerical	1	\$19	\$9,500
		Subtotal			\$135,500
		Administrative Equipment/Supplies			
Month	6	Project Office	1	\$999	\$5,994
Month	6	Fax, Copier	1	\$312	\$1,872
Month	6	Phone	1	\$250	\$1,500
Week	18	Postage	1	\$37	\$666
Month	6	Utilities	2	\$125	\$1,500
Month	6	Supplies	1	\$312	\$1,872
Month	6	Cleaning and Disposal	1	\$312	\$1,872
Day	80	PPE for Administrative Personnel	2	\$25	\$4,000
Week	18	Administrative Truck	1	\$281	\$5,058
		Subtotal			\$24,334
		Incidental Costs			
Each	1	Travel	20	\$625	\$12,500
Day	80	Subsistence	4	\$94	\$30,080
		Subtotal			\$42,580

		Total			\$202,414
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Decontamination Cost Summary

Unit	Unit Quantity	Item Description	Item Quantity	Rate	Extension	Totals
		Direct Costs				
Mandays	1	Labor				
		Direct Labor Cost	1262 126 5	\$350	\$441,700 42,750	
						\$441,700 42,750
		Equipment				
		Direct Equipment			\$309,980	
		Supplies			\$111,026	
						\$421,006
		Project Overhead				
		Project Management Personnel			\$135,500	
		Admin Equipment/Supplies			\$24,334	
		Incidental Costs			\$42,580	
						\$202,414
LS	1	Mobilization	1	\$37,473	\$37,473	
LS	1	Demobilization	1	\$12,491	\$12,491	
						\$49,964
Subtotal						\$1,115,084 1,116,134
LS	5%	Contingency	1	\$1,115,084 1,116,134	\$55,754 55,754.807	
						\$55,754 55,754.807

						<u>807</u>
		Total				<u>\$1,170,838</u> <u>1,171,941</u>

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SECTION VI
DECONTAMINATION STANDARDS/ANALYTICAL
PARAMETERS

**Table I-1.3
Decontamination Rinse Water Analysis**

Parameters (T=Total Metals)	Maximum Concentration Increase* (mg/l)
Oil and Grease	15.0
Phenols	0.2
Arsenic - T	0.1
Barium - T	5.0
Cadmium - T	0.03
Copper - T	1.0
Lead - T	0.1
Mercury- T	0.005
Selenium - T	0.05
Silver - T	0.1
Total Organic Halides	0.5
Total Organic Carbon	40.0
Cyanides	0.2

* The values given are the maximum allowable increase in a parameter, over the level that exists in the final rinse water prior to use. This "prior existing level" shall be established as the average of at least three (3) analyses of the rinsewater, plus three (3) standard deviations. These analyses will be made at the time of closure, when a water source is known.

The decontamination rinse water will also be analyzed for extractable explosives (SW-846 Method 8330B) for the ATF magazines final rinse. If extractable explosives are detected based upon the lower detection limits established by the analytical method, a decision will be made to

repeat decontamination procedures until no explosives are detected or dispose of the entire magazine(s) as hazardous waste.

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Table I-1.3 (Continued)
Decontamination Rinse Water Analysis

NOTE:

1. Many different waste codes will be handled through-out the Clive facility. Over its operating lifetime, it is likely that each unit will eventually handle practically all waste codes actually received either directly or through the "mixture" and "derived from" rules. From a regulatory viewpoint, then, the potential variety of contamination at all units will be identical. Therefore, only one list of parameters will be considered. This list will be used for all waste management units throughout the facility.

The parameters listed in Table I-1.3 are intended to represent the contaminants likely to be present in the highest levels, and to give an indication of potentially toxic constituents. It must be noted that many of the constituents of concern - the organics, especially the chlorinated organics - are volatile and will likely vaporize for the most part during the cleaning process itself. The loss of these relatively small amounts of materials is considered as unavoidable and non-threatening to the environment or the general public. Any remaining heavy, residual organics will be included by the analyses for Oil and Grease, TOC, and/or TOX. All of these parameters will detect general contamination to relatively small values.

It must also be remembered that the decontamination procedures listed in the application apply only to surfaces which are relatively impermeable (designated as "hard surfaces"). They will be used only for metallic items, such as tanks, and concrete. Any porous material, such as soils are intended for landfilling or other EPA/State approved treatment technologies. For most of the items to be decontaminated, a visual inspection will be as useful as actual analysis of the wash; however, to provide a quantitative, objective measure of contamination (or the absence thereof), and a historical record, these analyses will be conducted as described previously for "hard surfaces."

Wide ranging analyses for specific organic chemicals, such as that achieved by GC/MS work, will not provide significantly more useful information. In addition, these analyses take considerable periods of time, during which site conditions would have changed markedly (due to continuing exposure to the elements).

The parameters chosen will adequately sample for all constituents of real concern, or for indicators of those constituents.